Sunyield

新益技术

New Generation Accurate OTA Test System：
AudioRF-Chamber (LF / HF)

Product Manual

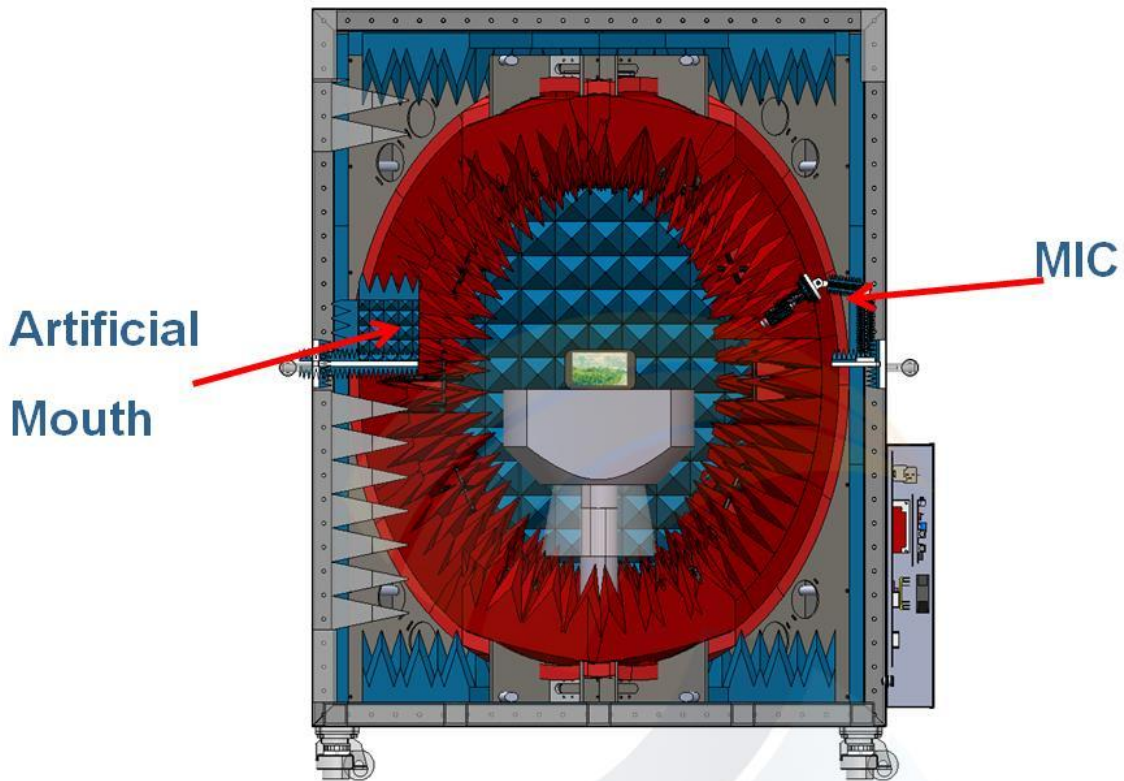**Faster** testing

More **stable**

Comprehensive **function**

System advantage

新益技术

AudioRF-Chamber

Artificial Mouth

MIC

AudioRF Chamber is a comprehensive and fast OTA testing and audio measurement solution suitable for the mass production stage of intelligent terminal products, as well as fields such as acoustic research, audio equipment testing, and audio product development. This device combines the characteristics of fast OTA testing and audio measurement, supporting various communication standards such as 2G/3G/4G/5G, Wi Fi, Bluetooth, NB IoT, eMTC, LoRa, Zigbee, etc., and providing an ideal environment for audio measurement and analysis.

1 Rapid OTA
By using the multi-probe distribution technology, the rotation of the turntable is replaced by the electrical switch of the probe, which greatly improves the test efficiency.

2 Audio measurement
Support audio frequency measurement and analysis of speakers, microphones (electret, silicon microphone, etc.), telephones and mobile phones, various types of headphones (wired, USB, Bluetooth, WiFi, ANC, etc.), hearing aids, communication devices for speech, intelligent wearable devices, USB music products, WiFi music products, power amplifier products.

3 Cost effective
As a AudioRF OTA shielding room test system, BST-AudioRF-LB is flexible, cost-effective and space saving..

4 One-to-many test
It supports multi-antenna test (Up to 1 to 4) in non-signaling mode and has high test efficiency.

5 Excellent adaptability
The test platform can be customized according to the needs of users, and can meet the test needs of different sizes of terminals such as earphone, watch, audio, mobile phone and flat lamp..

6 Strong Compatibility
It supports compatible mainstream instruments such as R&S, Keysight, Antitsu, Litepoint and StarPoint.

AudioRF-Chamber Measurement System

SUNYIELD
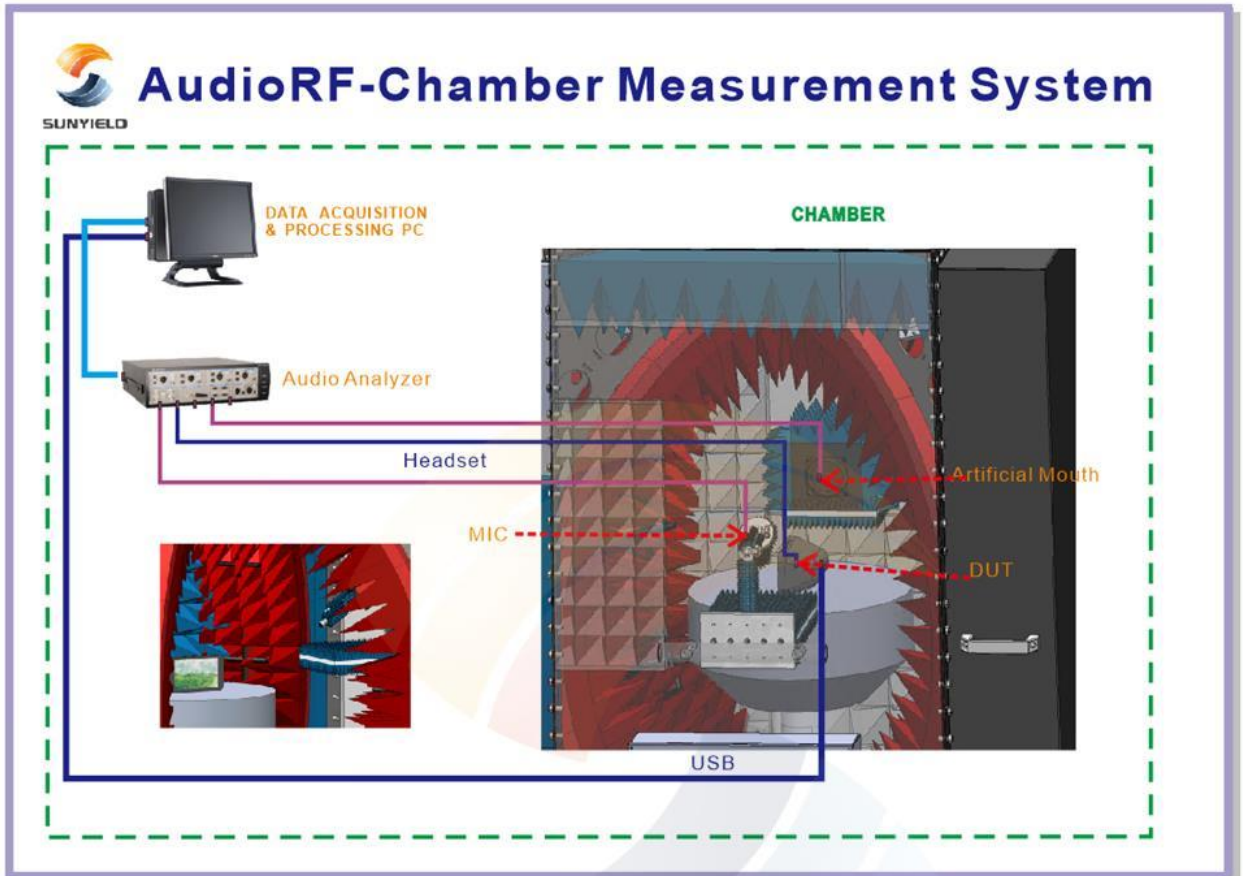
Basic parameters (audio)

- Frequency range: 0.1Hz-80.1kHz
- Background noise: 1.3uV (20-20kHz)
- Frequency accuracy: 2ppm
- Amplitude accuracy: ± 0.03dB
- Flatness: ± 0.008dB (20-20kHz)
- Bandwidth: 90kHz
- Shielding efficiency: ≤ -70dB
- Maximum size of the tested object:~250mm

Test project (audio)

- SPK: Frequency response; THD+N; Signal to noise ratio; Power; Crosstalk; Balance degree; Bottom noise; Dynamic range
- MIC: frequency response; Distortion; Sensitivity; Consistency; Airtightness

Supported test items

- speaker
- Microphone (electret, silicon microphone, etc.)
- Telephone and mobile phones
- Various earphones (wired, USB, Bluetooth, WiFi, ANC, etc.)
- Hearing aid
- Communication device for speech
- Intelligent wearable device
- USB Music Products
- WiFi Music Products
- Power amplifier products

Micro-Chamber OTA Measurement System

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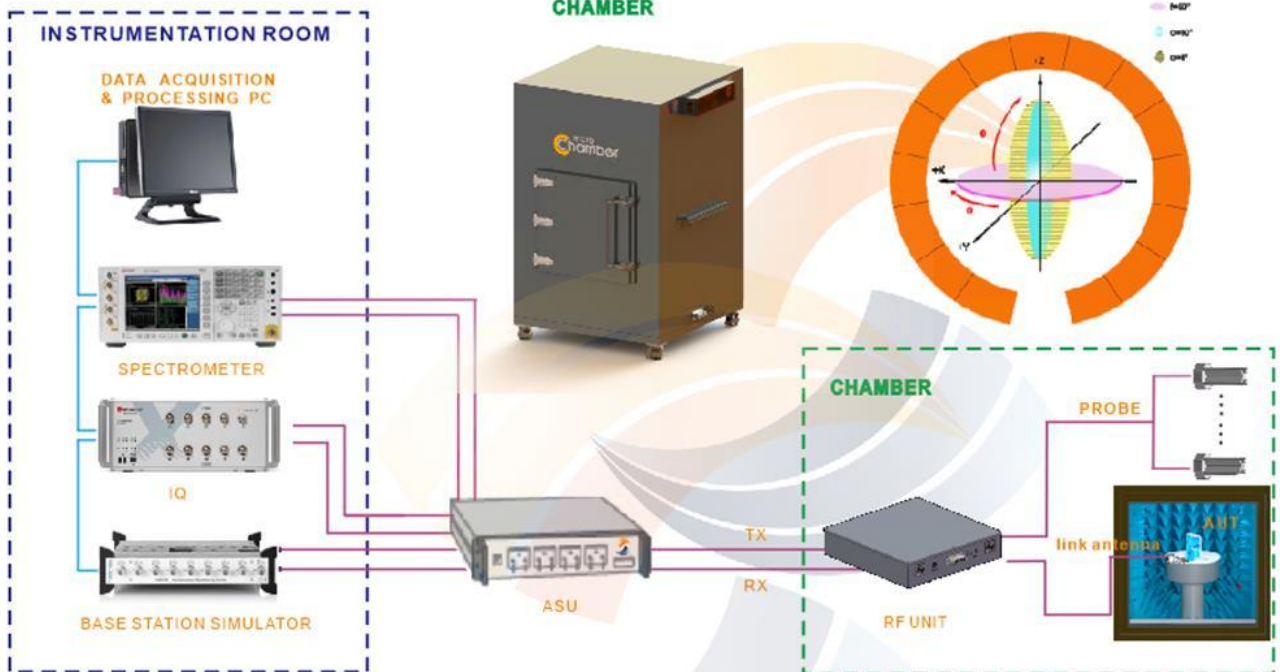
Basic parameter

- Overall dimensions of the system:
  HF:0.8m (W) ×0.8m (D) ×1.3m (H)
  LF:1.2m (W) ×1.1m (D) ×1.6m (H)
- Frequency bands：
  HF:1.6GHz-8GHz
  LF: 0.8GHz-8GHz
- Shielding efficiency:≤-70dB
- Max size of DUT:~ 250mm

Test items

- Supported test mode (active)：Wi-Fi,BT BDR/EDR,BLE DTM,4G/5G,LoRa,NB-IoT,Zigbee;
- Support signaling and non-signaling testing;
- Support RSE testing;
- Test parameters (Active): downlink TRP, EIRP, ACLR, EVM, uplink TIS, EIS, RSSI accuracy; active 3D pattern, etc.
- Throughput Test:Single point throughput,3D RVR

System Compatibility:

Type	Vendor	Model
Call Box	R&S	CMU200,CMW270,CMW500,CMX
	Antitsu	MT8820C/MT8821C/ MT8000A/ MT8860C/MT8862C/MT8852B
	Keysight	E7515B/C -5G, UXM
	StarPoint	SP8315 / SP6010 /SP9500- 5G
Spectrum Analyzer （non-signaling）	R&S	FSV,FSW series
	Keysight	E5182B,E9020,N4010 series
	Litepoint	IQxel
Signal generator	R&S	SMB, SMA series
	Keysight	E4438C, N5182B

Measurement Efficiency		
OTA Active Measurement Time	TRP Measurement (1Ch) : 8-15sec	TIS Measurement (1Ch) : 10-60sec

| Test Repeatability and Accuracy		
Test Items	Repeatability	Test Accuracy
TRP	≤±0.3dB	≤±1dB
TIS	≤±0.5dB	≤±2dB
RSSI	≤±1.0dB	≤±2dB

- AudioRF-Chamber is committed to solving OTA test problems on production line, and can provide the same test accuracy and more excellent test speed and consistency as R&D level labs.
- It adopts the original desk layout scheme, abandons the mechanical turntable design in the traditional system, and uses the fast OTA algorithm to give full play to the advantages of test speed, especially suitable for batch test on the production line.

- Dual-polarized Vivaldi test antenna can meet various types of test objects such as linear polarization and circular polarization.
- Probe normalization processing, through software calibration compensation, make each probe performance consisten.

RSE TEST

RSE （Radiated Spurious Emission） test is an important required test item for Radiated objects such as mobile phones and Bluetooth headphones. Both the 3GPP standard and the FCC's North American standard have strict requirements for this. The problem of radiation dispersion is a complicated and troublesome one in the research and development of mobile phones. In order to help designers to solve the problem of radiation stray, we launched a radiation stray test program for customers.
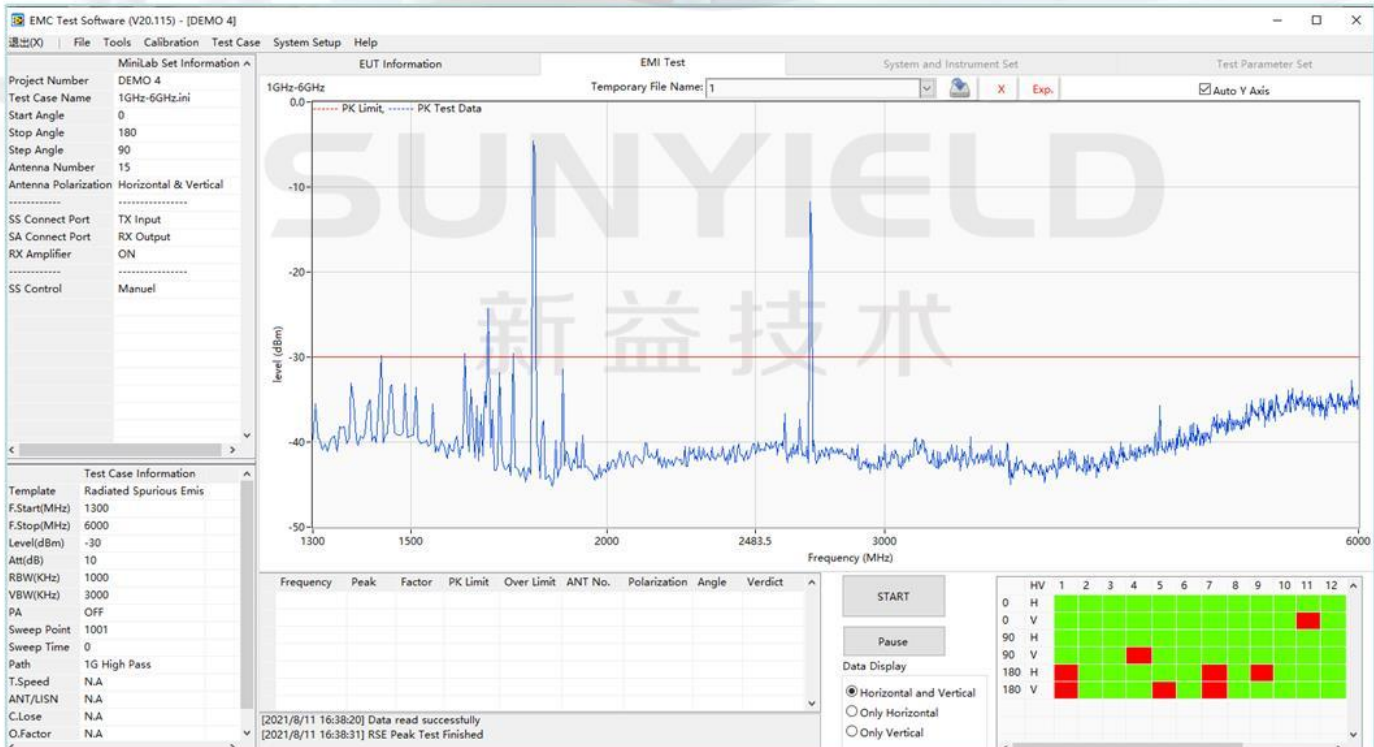
Non-signaling Test

The non signaling test of mobile phones, tablets, audios, Bluetooth headsets, etc. is to test the RF of the tested object without signaling interaction between the tested object and the test instrument (analog base station, such as n9020a/iq).

In general, taking two band GSM mobile phones as an example, compared with the signaling mode, non signaling can save more than 50% of the test time, that is to say, the output of the same number of test equipment will be doubled. Non signaling test is especially suitable for production line test in mass production stage.

One-to-many test

The system can customize the test fixture according to the shape of the tested object, which is suitable for one to many test mode in non signaling mode.

● It supports multi-antenna test (Up to 1 to 4) in non-signaling mode and has high test efficiency.
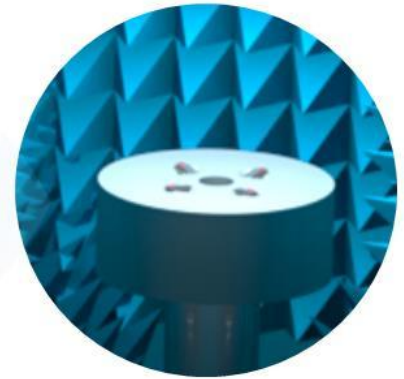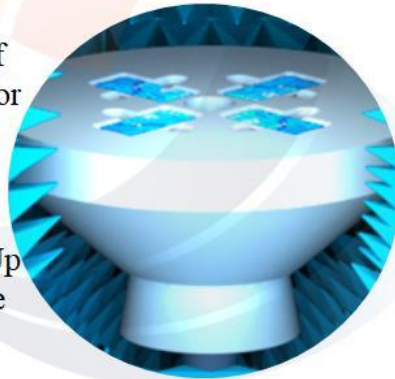
Throughput Test

Throughput is the amount of data that a network device or port can successfully transmit per unit of time (Mbps), that is, the maximum rate at which a Wi-Fi device can receive and send without losing frames.

The throughput test method and test environment adopted by the system can identify the advantages and disadvantages of the current MIMO router/terminal throughput performance. Therefore, for THE Sation/AP designed by MIMO technology, the system has good testing ability.

Test Function:

◆ Wi-fi/Bluetooth throughput test.

◆ Data buffer Settings, the computer receives data buffer according to the test throughput size custom Settings.

◆ Line loss setting, custom setting start loss, stop loss and loss reduction step, control test time.

◆ Data interaction duration can be set.

Test Support :

· Support Wi-Fi MIMO (4 x 4, 2 x 2) throughput testing;

· Supports Sation and AP tests

· Support wi-fi a/b/g/n/ac/ax

· 360° throughput

· DUT different posture throughput

· Peak throughput
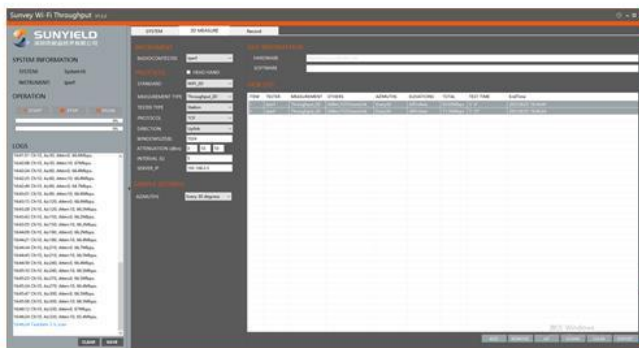
Audio testing

AudioRF Chamber provides users with professional and comprehensive solutions for audio measurement in fields such as acoustic research, audio equipment testing, and audio product development, helping to achieve efficient and accurate testing and analysis.

SUNYIELD Series Options list

Option model	8192D	8190	6022	6024	6088	6082	6186	notes
HardwareOptions Note: Yes: This model supports this option but does not have it as standard; No: This model does not support this option; Included: This option is included as standard								**Function Introduction**
AG52	No	No	Yes	Yes	No	No	No	High performance analog signal source module, fast rising edge square wave, 2dB low noise distortion, DIM, IMD intermodulation distortion test, 26.6V output
BW52	No	No	Yes	Yes	No	No	No	Analysis of widened input bandwidth, with single channel reaching 1MHZ and dual channel reaching 500kHZ
ADIO	No	No	Yes	Yes	Yes	Yes	Yes	Advanced digital input/output interface, input interface testing, output interface matching, Jitter signal source (requires advanced control clock)
DSIO	No	No	Yes	Yes	Yes	Yes	Yes	Digital serial input/output interface, providing I2S signal for chip level analysis
HDMI	No	No	Yes	No	Yes	Yes	No	HDMI audio test interface, supporting ARC function
PDM	No	No	Yes	Yes	Yes	Yes	Yes	PDM pulse microphone testing option, providing logic level output
Bluetooth	No	No	Yes	Yes	Yes	Yes	Yes	Bluetooth test connection option, supporting multiple commonly used modes for connection
DIGITAL	Included	No	Included	Included	Included	Included	Included	
				软件选件SoftwareOptions				
AML	Included	Yes	Included	Included	Included	Included	ncluded	IMD,MOL,Dynamic range, FFT, and other advanced testing features
ACR	Included	Yes	Included	Included	Included	Included	Included	Acoustic Response Test Function Option
HST	Included	Yes	Included	Included	Included	Included	ncluded	High speed testing of multi tone and continuous sweep measurement
ASIO	Included	Yes	Included	Included	Included	Included	ncluded	ASIO audio stream input/output function
PESQ	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Subjective Speech Quality Assessment
POLQA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Subjective Speech Quality Assessment
SPK-RD/PT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Speaker testing options: T/S parameters, Ruby&Buzz, impedance curve, and other speaker parameters

Hardware Option

- AG52: High performance analog signal source module, fast rising edge square wave, 2dB low noise distortion, DIM, IMD intermodulation distortion test, 26.6V output
- BW52: Widened input bandwidth analysis, single channel up to 1MHZ, dual channel up to 500kHZ
- ADIO: Advanced digital input output interface, input interface testing, output interface matching, Jitter signal source (requires advanced control clock)
- DSIO: Digital serial input/output interface, providing I2S signal for chip level analysis
- HDMI: HDMI audio test interface, supporting ARC power
- PDM: PDM pulse microphone testing option, providing logic level output
- Bluetooth: Bluetooth test connection option, supporting multiple commonly used modes for connection

SUNYIELD Audio Test

SUNYIELD Audio All models of audio analyzers have a universal USB connection that allows for remote software upgrades and free use. Support secondary development of VISUALBASIC.NET, C #, MATLAB, and LABVIEW platforms.

The software platform of SUNYIELD Audio audio analyzer provides two convenient modes for use. BENCH MODE allows for real-time monitoring of device behavior for various parameters, while SEQUENTIAL MODE allows for rapid production testing and automated measurement. You can switch between two modes at will.

The sequence mode can be used for simple production, and can call external executable programs (such as. EXE programs). It can control the instrument to output 0-5V trigger signals or trigger instrument operations with external signals. The software comes with upper and lower limit judgment for the results.

Multiple test data can be used for calculation processing (such as testing noise reduction effect comparison curve, multi microphone comparison curve).

All testing devices are saved in a separate project file, making it easy to replicate the testing devices between R&D and production equipment no matter where they are located. The project files are compatible with all SUNYIELD instruments, and each file is independent, so there is no need to worry about correlation or chain breakage. Users can even embed waveform files and images in a project file.。
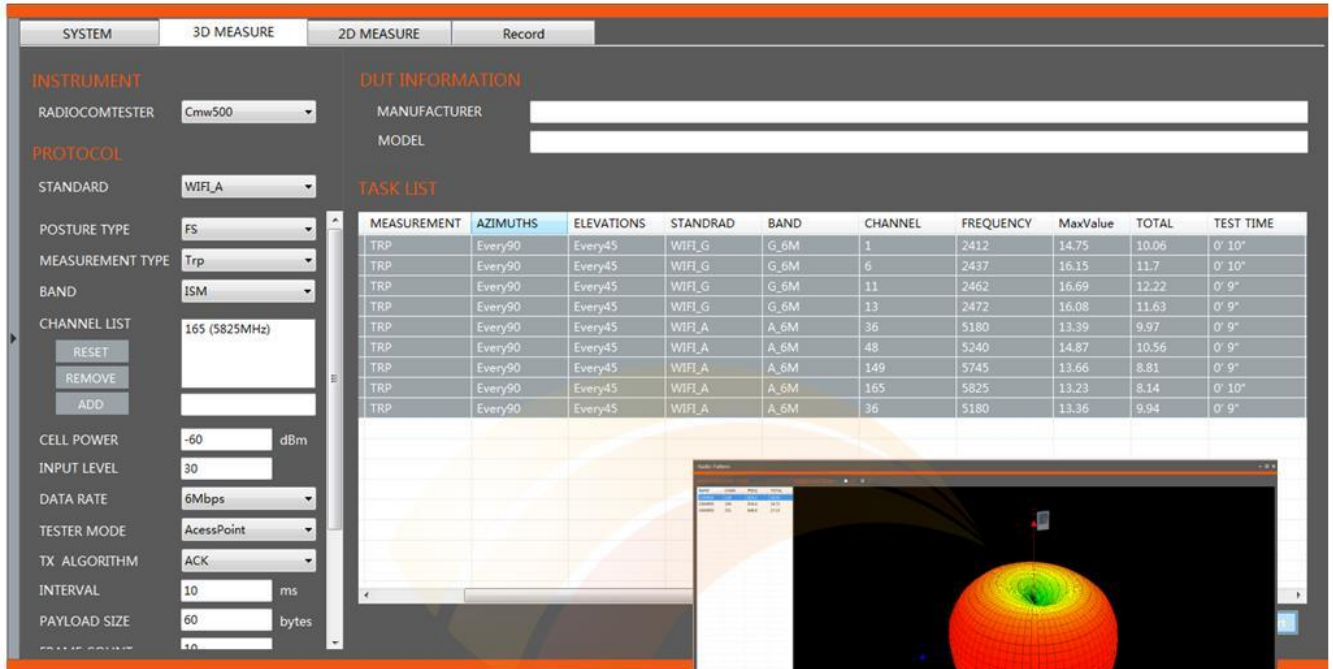
Software Options

Standard configuration:

- **AML: IMD, MOL, dynamic range, FFT, and other advanced testing functions**
- **ACR: Acoustic Response Test Function Option**
- **HST: High speed testing, multi tone, and continuous sweep measurement**
- **ASIO: ASIO audio stream input and output function**

Upgradable items::、

- PESQ: Subjective Voice Quality Assessment, PPESQ can provide enhanced perceptual audio measurement for telecommunications voice quality. PESQ has been licensed by OPTICOMG to form the International Telecommunication Union Telecommunications Standardization Department (ITU-T) P.862 standard. PESQ is designed specifically for testing the voice quality of low bandwidth devices, such as mobile phones and smartphones. The MOS score results of PESQ are highly correlated with the test results of human subjects.

- There is a high correlation with the test results of human subjects.

- POLQA: Subjective Voice Quality Assessment, licensed by OPTICOM, is an upgraded technology of PESQ (see above) designed specifically for measuring changes in the communication environment. It can be used for high-definition voice

- 3G, 4G/LTE, and VoIP technologies provide support. Like PESQ, the test results of POLQA are similar to those of human subjects

- Ultra high correlation. Unlike PESQ, POLQA can handle broadband audio, sound sensors, DSP, and levels.

- SPK-RD/PT STI: Speaker testing options: T/S parameters, Ruby&Buzz, impedance curve, and other speaker parameters. The developer can verify the STI performance of their design. Once installed, the STIPA measurement function can be easily integrated into any measurement sequence. In addition, this accessory includes voice level measurement requirements that comply with IEC60268-16, and can adjust the STIPA signal level appropriately.

- MRT: Designed to provide objective estimates of speech clarity, it can be fully integrated into the SUNYIELD series of analyzers (including test sequences, limitations, and reports), with up to 16 acquisition channels, and can be connected to various audio interfaces.

OTA Active test

Traditional antenna measurement methods，known as passive testing, mainly test the radiation properties of the antenna itself. But for mobile terminal equipments, such as mobile phone, antenna performance do not represent the whole equipment rf signal receiving and sending performance. So at present, on behalf of the mobile phone eventually radiation performance, the whole machine transmitting and receiving performance test is more and more attention. This measurement method is usually within the specific microwave dark room, test of mobile phone radiation power and receiver sensitivity, is called the active test.

Test standard

- 2G： GSM GPRS EDGE HSDPA HSUPA
- 3G： WCDMA TD-SCDMA CDMA2000 CDMA2000 1xEvDO CDMA2000 1xRTT
- 4G： LTE-TDD LTE-FDD
- 5G： NSA SA
- WIFI： Wi-Fi_a/b/g/n/ac/ax/6E

- BT： Bluetooth
- IOT： eMTC LoRa NB-IoT Zigbee

Function：

➢ Mobilephone TIS and TRP performance test, including 2G/3G/4G/5G test, Wi-Fi test, Bluetooth test, Zigbee, LoRa test. TIS test contains TIS with RSSI/TIS with RSSI(L)/TIS BER FAST/TIS test mode.

➢ 2D/3D direction diagram，support direction figure project a key import and export.

➢ The active gain calibration.

➢ Auxiliary calibration.Can perform ASU calibration, IO Port calibration, line loss measurement, active gain compensation calibration file.

➢ With the real-time testing, real-time display of the test results, output MaxPoint automatically.

➢ Support the human phantom head and hand model test.

➢ Signaling/Non-signaling test

Technical parameters and chamber coloring scheme

Base color: Black

Base color: white

Service and technical support	
System calibration	Free system calibration after delivery
Warranty service	Free for the first year
Software upgrade	Free for the first year

Sunyield Technologies CO.LTD, founded in 2011, is the earliest company in China to research near field multi-probes antenna measurement technology. Over the years has focused on the related areas technology innovation and market development, Sunyield service in the domestic most antenna manufacturer, and is committed to become the industry leading manufacturers.

website:

wechat: